The xOEMcore is a combined 6-axis inertial measurement unit and navigation system with sensor fusion in one compact OEM module. It is ideal for integration inside any solution that requires robust, high-performance position and orientation.

>> Navigation features
- WGS84 strapdown navigator
- Sensor fusion included
- Tightly-coupled GPS processing
- Dual-GPS processing for heading
- Inertially-aided RTK algorithms
- RTCM V3 and RINEX DGPS
- Odometer input
- Post-processing option

>> IMU features
- Temperature calibration
- 3°/hr and 50 µg bias stability
- 500 ppm linearity
- <0.02° orthogonality error
- No export control

>> Get stable position and orientation, not just IMU measurements
Our xOEMcore enables you to take advantage of robust, continuous inertial position and orientation in your own application or research without needing to become an expert yourself. Our proven sensor fusion is already running in our products and is easily adaptable for your application.

>> Feed in your sensor data and we combine it
Whether you use LIDAR, vision, GNSS, sonar, wifi or other forms of aiding, the xOEMcore fuses all your measurements with inertial sensors. By blending the data with the on-board Kalman filter, it provides an optimal solution giving you robust, continuous position and orientation at a high data rate. It can use your data if it is nearly 1 second late while maintaining millisecond output delay.

>> Advanced GPS processing
Get unsurpassed accuracy from low-cost GPS receivers with optional gxix™ tight coupling algorithms, DGPS corrections, and forward-backward post-processing. Enhance survey-grade receivers with an inertially-aided RTK solution. With two receivers we compute a stable heading solution. That is technology your customers want to combine with your application expertise.

>> Applications
- UAV surveying, mobile mapping
- LIDAR, visual, remote sensing
- Direct geo-referencing
- Robust indoor positioning
- Multi-environment positioning
- Autonomous vehicles and robots
- Research

>> Flexible, customisable, simple integration
Mount at any angle in your product, output what you need, synchronise to other timing sources: the xOEMcore provides a flexible solution for integration. We are always looking for new ways to customise the xOEMcore for your needs. Our simple integration approach means you can create your customised solution from a single low cost microcontroller or a powerful multi-core system.

Using the xOEMcore you can combine the knowledge from the leader in MEMS inertial navigation systems in your product and deliver amazing results to your customers faster and more cost-effectively.
**Navigation performance**

<table>
<thead>
<tr>
<th>Aiding</th>
<th>Conditions</th>
<th>Position (CEP)</th>
<th>Velocity (RMS)</th>
<th>Heading (RMS)</th>
<th>Roll/pitch (RMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>u-blox LEA6</td>
<td>gx/ix™, RTCM V3, 4 m antenna baseline, open sky</td>
<td>0.5 m</td>
<td>0.02 m/s</td>
<td>0.06°</td>
<td>0.05°</td>
</tr>
<tr>
<td>Topcon B110</td>
<td>gx/ix™, RTCM V3, 4 m antenna baseline, open sky</td>
<td>0.02 m</td>
<td>0.015 m/s</td>
<td>0.05°</td>
<td>0.05°</td>
</tr>
<tr>
<td>Novatel OEM6</td>
<td>gx/ix™, RTCM V3, 4 m antenna baseline, open sky</td>
<td>0.01 m</td>
<td>0.015 m/s</td>
<td>0.05°</td>
<td>0.05°</td>
</tr>
<tr>
<td>Odometer / DMI</td>
<td>1 minute or 1 km without GNSS data</td>
<td>2.20 m</td>
<td>0.02 m/s</td>
<td>0.6°</td>
<td>0.08°</td>
</tr>
<tr>
<td>Odometer / DMI</td>
<td>Post-processed, 1 minute or 1 km without GNSS data</td>
<td>0.80 m</td>
<td>0.02 m/s</td>
<td>0.4°</td>
<td>0.07°</td>
</tr>
</tbody>
</table>

**Options**

- xOEMcore: Base model, raw IMU capability
- +Navigation: Allows aiding input, adds INS capability
- +PP: Allows raw data logging, adds post-processing capability
- +gx/ix: Allows differential corrections, adds gx/ix™ tight-coupling
- +gx/ix RTK: Allows RTK corrections, adds gx/ix™ inertial relock

**IMU performance**

<table>
<thead>
<tr>
<th>Type</th>
<th>Accelerometers</th>
<th>Gyros</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>MEMS</td>
<td>MEMS</td>
</tr>
<tr>
<td>Range</td>
<td>5 g</td>
<td>300°/s</td>
</tr>
<tr>
<td>Bias stability</td>
<td>0.05 mg</td>
<td>3°/hr</td>
</tr>
<tr>
<td>Linearity</td>
<td>0.05%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Scale factor</td>
<td>0.05%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Random walk</td>
<td>0.05 m/s/\text{hr}</td>
<td>0.5°/\text{hr}</td>
</tr>
<tr>
<td>Axis alignment error</td>
<td>&lt;0.02°</td>
<td>&lt;0.02°</td>
</tr>
</tbody>
</table>

**Hardware**

- Dimensions: 50 x 65 x 24 mm
- Mass: 50 g
- Input voltage: 5 V dc
- Power consumption: 2 W (typical)
- Operating temperature: -20° to 70° C
- Calculation latency: <3 ms
- Shock survival: 1000 g, 10 ms
- Interface: Serial
- Transmission rate: 115200 baud

**Integration**

Choose your aiding

- GNSS, dual antenna GNSS
- DMI, odometer, visual odometry
- LIDAR, visual positioning
- Indoor GPS, Wi-Fi, Bluetooth
- USBL, DVL, compass

And more...

...Improved data accuracy

Aiding data

- GNSS, dual antenna GNSS IMU data
- Continuous, robust measurements
- 100 Hz outputs
- Low latency
- Position, velocity & orientation

...Forwards-backwards processing
- RTCM v3, RINEX
- gx/ix™ tight coupling
- Manual corrections
- Improved data accuracy

>> Options

- xOEMcore: Base model, raw IMU capability
- +Navigation: Allows aiding input, adds INS capability
- +PP: Allows raw data logging, adds post-processing capability
- +gx/ix: Allows differential corrections, adds gx/ix™ tight-coupling
- +gx/ix RTK: Allows RTK corrections, adds gx/ix™ inertial relock

---

Oxford Technical Solutions Ltd, United Kingdom
Email: sales@oxts.com
Web: www.oxts.com

Document version: 170517. Specifications subject to change without notice.